

In the Claims

1. (Previously Amended) A particle shield designed to provide reliable protection against hypervelocity particles, comprising:

a plurality of flexible shield layers;

a resilient support layer between adjacent ones of the flexible shield layers;

a protective cover configured to enclose the flexible shield layers; and

fasteners attached to the protective cover and capable of releasably securing the flexible shield layers to a structure to be protected.

2. (Original) The particle shield of claim 1, wherein the support layer includes a space qualified open-cell foam.

3. (Original) The particle shield of claim 1, wherein the support layer includes a space qualified closed-cell foam.

4. (Original) The particle shield of claim 3, wherein each cell of the closed-cell foam contains a predetermined low pressure gas.

5. (Original) The particle shield of claim 1, wherein the support layer includes a ceramic foam.

6. (Original) The particle shield of claim 1, wherein the support layer has one or more portions removed therefrom.

7. (Presently amended) The particle shield of claim 1, wherein the fasteners include one or more ~~Velcro~~ VELCRO™ hook and loop material fasteners.

8. (Original) The particle shield of claim 1, wherein the fasteners include one or more snap fasteners.

9. (Original) The particle shield of claim 1, wherein the fasteners include one or more straps.

10. (Original) The particle shield of claim 1, wherein at least one of the flexible shield layers is made of a ceramic fabric.

11. (Original) The particle shield of claim 1, wherein at least one of the flexible shield layers is made of a high-strength fabric.

12. (Original) The particle shield of claim 1, further comprising at least one thermal insulation layer.

13. (Original) The particle shield of claim 1, wherein the protective cover is made of an abrasion resistant material that has an absorptivity to emissivity ratio selected to provide a predetermined level of thermal protection.

14. (Original) The particle shield of claim 1, wherein the protective cover is vented.

15. (Original) The particle shield of claim 1, wherein the protective cover is flame retardant.

16. (Previously Amended) The particle shield of claim 1, wherein the protective cover is optically reflective.

17. (Previously Amended) A protection system for providing reliable protection against hypervelocity particles, comprising:

- means for shocking the impacting hypervelocity particles;
- means for supporting the shocking means in a resilient manner;
- means for enclosing the shocking means in a cover layer; and
- means for securing the shocking means on a structure to be protected.

18. (Original) The protection system of claim 17, further comprising means for reducing a size and volume occupied by the protection system.

19. (Original) The protection system of claim 17, further comprising means for deploying the shocking means on a structure to be protected.

20. (Original) The protection system of claim 17, further comprising means for thermally insulating the shocking means.

21. (Original) The protection system of claim 17, further comprising means for substantially venting gas particles produced by the impact of the hypervelocity particles.

22. (Original) The protection system of claim 17, further comprising means for substantially containing debris produced by the impact of the hypervelocity particles.

23. (Canceled)

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Previously Amended) A hypervelocity particle shield, comprising:
a plurality of spaced apart flexible shield layers, at least one of which is made of a flexible ceramic fabric;

a resilient support layer between adjacent ones of the flexible shield layers, the resilient support layer including at least one space qualified foam layer, wherein the at least one flexible shield layer has an areal density that is substantially equal to a predetermined constant times a hypervelocity particle's cubic density multiplied by its diameter;

at least one thermal insulation layer disposed on the plurality of flexible shield layers;

a vented, abrasion resistant protective cover configured to enclose the flexible shield layers and having an absorptivity to emissivity ratio selected to provide a predetermined level of thermal protection; and

fasteners attached to the protective cover and capable of releasably securing the flexible shield layers to a structure to be protected.

28. (Original) The hypervelocity particle shield of claim 27, wherein the space qualified foam layer includes an open-cell foam layer.

29. (Original) The hypervelocity particle shield of claim 27, wherein the space qualified foam layer includes a closed-cell foam layer, each cell therein containing a predetermined low-pressure gas.

30. (Original) The hypervelocity particle shield of claim 27, wherein the support layer further includes a ceramic foam layer.

31. (Original) The hypervelocity particle shield of claim 27, wherein the support layer has one or more portions removed therefrom.

32. (Original) The hypervelocity particle shield of claim 27, wherein the fasteners include one or more snap fasteners.

33. (Original) The hypervelocity particle shield of claim 27, wherein the fasteners include one or more straps.

34. (Presently Amended) The hypervelocity particle shield of claim 27, wherein the fasteners include at least one ~~Velcro~~ VELCRO™ hook and loop material fastener.

35. (Previously Added) The particle shield of claim 1, wherein the protective cover is optically absorptive.

36. (Previously Amended) The particle shield of claim 1, further comprising:
a plurality of vent holes formed in a peripheral side wall of the protective cover.

37. (Previously Amended) The particle shield of claim 1, further comprising:
a back wall layer between the plurality of flexible shield layers and the protective cover.

38. (Previously Amended) The particle shield of claim 1, wherein each shield layer has a thickness that is determined based on a size of a particle to be shocked.

39. (Previously Added) The particle shield of claim 1, wherein at least one flexible shield layer has an areal density that is substantially equal to a predetermined constant times a hypervelocity particle's cubic density multiplied by its diameter.

40. (Previously Added) The particle shield of claim 1, wherein the particle shield has an overall thickness that is based on a critical diameter of a particle to be shocked.